STUDIES IN THE OPHIOGLOSSACEAE — I

A Descriptive Key to Ophioglossum in the United States

By Ralph Curtiss Benedict

The following synopsis is designed to serve two purposes: to express some of the relationships existing between the various described taxonomic units of the genus, and to further the identification of these units. The terminology used is explained in the following generic description.

Plants small, terrestrial; the rhizomes small, erect, more or less tuberous; the fronds one to four, herbaceous, consisting of a usually short, cylindric commonstalk, bearing at its summit an entire, oblique or horizontal, linear-lanceolate to reniform, sessile or short-stalked lamina, and a single, usually long-stalked spike, the sporophyl.

The terminology in the Ophioglossaceae is in a rather unsatisfactory state. Prantl, who has given the genus *Ophioglossum* a very thorough systematic treatment, used the Latin equivalents for "leaf" and "petiole," and spoke of the sporophyl as "arising from the petiole or base of the lamina." But the lamina and sporophyl seem to be morphologically coördinate, so that this expression is inaccurate. Professor Underwood has used instead of "petiole" the term "common stalk," which, although not altogether satisfying, is at least not misleading, and this expression is adopted here, being used, however, as a single word.

Morphological studies of the group seem to demonstrate that the structure here called a "frond" is undoubtedly foliar in origin. On this account, the "common stalk" might as well be called a common petiole, but here the analogy ceases, for the vegetative and reproductive structures above certainly do not correspond to the blade or lamina in ordinary fern or flowering plants. Perhaps the best way out of the difficulty would be to coin one or more new terms for the anomalous structures in the family, but this can best be left to the morphologists at whose hands the group needs further study.

The genus may be subdivided as follows:

Lamina deltoid-ovate or cordate, base auriculate or truncate; rhizome globose, 5–10 mm. thick; commonstalk short, hypogean; fronds two to four, rarely solitary; spike short and stout. (Southern States, Mexico and South America.)

1. *O. crotalophoroides* Walt.*

Lamina lanceolate or spatulate to ovate, rarely broader, base acute, obtuse or rounded.

Plants normally small, usually less than 9 cm. high (1.5–11.5); fronds two or three, rarely solitary; commonstalk hypogean, usually less than $\frac{1}{3}$ the height of the plant.

Rhizome very small, short-cylindric to globose, 2–5 mm. long, 1.8–5 mm. thick, lamina usually plane and horizontal, $\frac{1}{6}$–$\frac{1}{4}$ the height of the plant; median vein emitting one or two branches, areolae mostly small and divergent; spores 0.030–0.040 mm. thick. (Southern States and Cuba.)

2. *O. tenerum* Mett.

Rhizome larger, long-cylindric, 2–17 mm. long, 2–3 mm. thick, lamina usually folded and upwardly inclined, $\frac{1}{4}$–$\frac{1}{2}$ the height of the plant; median vein simple except for secondary connecting veinlets, areolae mostly larger and parallel; spores 0.040–0.050 mm. thick. (California and Mexico.)

3. *O. californicum* Prantl.

Plants larger, usually more than 12 cm. high (6–40); fronds usually solitary; commonstalk $\frac{1}{2}$ or more epigean, $\frac{1}{3}$–$\frac{2}{3}$ the height of the plant.

Lamina lanceolate, spatulate, elliptic, oblong or ovate, apex rounded or sometimes acute, not apiculate; spores reticulately marked with thin ridges, more or less verrucose.

Plants usually more than 15 cm. high; lamina variable in shape; commonstalk usually $\frac{1}{2}$ the height of the plant or more, mostly epigean. (Usually in wet boggy ground, Northeastern North America, Europe and Asia; also in Mexico?)

4. *O. vulgatum* L.

Plants mostly less than 15 cm. high; lamina lanceolate or elliptic; commonstalk about $\frac{1}{3}$ the height of the plant, about $\frac{1}{2}$ hypogean. (In sand, New Jersey, New York and New Hampshire.)

5. *O. arenarium* E. G. Britt.

Lamina elliptic or rarely ovate, usually acute, apiculate; spores merely finely pitted, faintly verrucose. (Virginia and Indiana to Mexico.)

6. *O. Engelmanni* Prantl.

Prantl, in his monograph, in which he treats the genus from a world-wide point of view, divides what he considers to be *Euophioglossum* into two groups of species according to the branching or non-branching of the mid-vein of the lamina, one of the characters used here to distinguish *O. tenerum* from *O. californicum*. In a general treatment, it may be necessary to make use of this

* *O. reticulatum* L. of tropical regions in general, is like *O. crotalophoroides* in the shape of the lamina, but differs in its greater size, usually solitary fronds, and in having a long, mostly epigean commonstalk, and a cylindric rhizome.

character, but it is hardly satisfactory even when most distinctive, and is often obscure and hard to ascertain, and, in a consideration of the species of a relatively limited area, its use may well be avoided. In his treatment of the American species, Prantl's work is in some respects deficient, owing to the fact that his material of these plants was for the most part scanty. For example, his description of *O. crotalophoroides*, a species originally from South Carolina, was with two exceptions based on South American collections. Of *O. californicum* he saw only part of one collection, of *O. tenerum*, one specimen, and similarly of others from South America. The result has been that some of his descriptions are rather incomplete, but in view of his insufficient material it is to be wondered that he was able to define the species as accurately as he did, and it is a tribute to his ability that his conception of specific limits has, after study of ample material, been generally affirmed.

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THE STORY OF THE MANGROVE

By George V. Nash

Those who have been to the southern parts of our own state of Florida, or have visited the shores of tropical America, have perhaps noticed, fringing the shores in many places, a shrub or small tree, from the horizontal branches of which descend long gaunt roots, and bearing, usually in great profusion, long club-shaped pendulous bodies which sway and dangle in every breeze. But have you realized the vast importance of this plant and the tremendous work it is accomplishing, and have you really understood what those peculiar long bodies are and what an important part they play in the dispersal of this plant, and hence in the increase of tillable land in the tropics, for this unassuming plant is a great land builder — how I will attempt to show later.

To fully understand what the plant is doing, we must first understand the plant itself. A native of the lowlands of its home, where it is always warm, this plant seems to have no seasonal